

SOV/54-58-3-16/19

AUTHORS: Tolkachev, S. S., Stroganov, Ye. V., Kozhina, I. I.

TITLE: The Structure of Lead Hydroxide (Preliminary Communication)
(Struktura gidrata okisi svintsa - (Predvaritel'noye
soobshcheniye))

PERIODICAL: Vestnik Leningradskogo universiteta. Seriya fiziki i khimii,
1958, Nr 3, pp 134-139 (USSR)

ABSTRACT: The crystal structure of metal hydroxides until now has only
little been investigated because in general they are ob-
tained in the form of amorphous precipitates. Lead hydroxide
is able to dissolve in alkaline solutions and to crystallize
from these solutions. In the present work the crystal struc-
ture of lead mono-hydroxide was found. Because of data ob-
tained from radiographic investigations the formula $Pb(OH)_2$
must be ascribed to the crystal hydrate $PbO \cdot H_2O$. In figure
3 the structure of $Pb(OH)_2$ is presented. In the crystalline
form of $Pb(OH)_2$ the chemical bond is determined mainly by
the interaction between the lead ion and the hydroxyl ions.

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The Structure of Lead Hydroxide
(Preliminary Communication)

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Nevertheless also the hydrogen and hydroxyl bonds play a considerable role in the structure. On the base of some information gathered and according to the approximation usually employed in crystallochemistry the hydroxyl ion may be represented by two spheres (Fig 4). This corresponds to the penetration of the proton into the sphere which gives an approximation of the oxygen ion (O^{2-}) within a distance of 1.13 Å from its center as well as of the domain of increased electron density formed around the proton. There are 5 figures and 3 references, 3 of which are Soviet.

SUBMITTED: March 24, 1958

Card 2/2

AUTHORS: Stroganov, Ye.V., Kozhina, I.I., Andreyev, S.M. 54-10-2-11/16

TITLE: The Structure of the Crystal $\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$ (Struktura kristalla $\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$)

PERIODICAL: Vestnik Leningradskogo Universiteta, Seriya fiziki i khimii, 1958, Vol. 10 Nr 2, pp. 109-116 (USSR)

ABSTRACT: Among the cobalt chlorides with different crystallization water content the compound $\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$ has not yet been investigated with respect to its crystalline structure. The authors undertook to do this, hoping that knowledge of a new structure would contribute towards generalizing these crystal hydrates. As a result of radiostructural investigation the structure of the crystal $\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$ was determined. The crystal is composed of ions Co^{2+} , Cl^- and H_2O molecules. The water molecules occur in the crystal in two states: 2/3 of all water molecules are in the immediate vicinity of the ions Co^{2+} . The distances between the centers of the water particles and the center of the ion Co^{2+} amount to 2.12 kX. 1/3 of all water molecules is far away from the particles Co^{2+} (3.20 kX). The water molecules which are nearest to the cobalt

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The Structure of the Crystal $\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$

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form groups of 4 round each of the Co^{2+} ion and form a rectangle in the center of which the Co^{2+} is located. The water molecules located at a greater distance are grouped along a straight line from both sides of this rectangle. This line passes through the center of the rectangle and with its normal forms an angle of 40° . In the series of chlorine cobalt crystals with different content of crystallization water the anion particles in the octahedral vicinity of Co^{2+} ions are replaced by water molecules with an increasing water content in the crystal. Chlorine cobalt hexahydrate can be considered to be a complex compound. It consists of an octahedral complex $[\text{Co}^{2+} \cdot 4\text{H}_2\text{O} \cdot 2\text{Cl}^-]$ and 2 water molecules which border immediately upon the Cl^- anions. It is rational to ascribe the chemical formula $[\text{Co}(\text{H}_2\text{O})_4\text{Cl}_2] \cdot 2\text{H}_2\text{O}$ to this substance in solid condition. There are 3 figures, 5 tables, and 3 references, all of which are Soviet.

SUBMITTED: November 19, 1957

AVAILABLE: Library of Congress

Card 2/2 1. Crystals—Structure 2. Crystal hydrates—Structural analysis

STROGANOV, Ye.V.; KOZHINA, I.I.; ANDREYEV, S.N.

Crystalline structure of $\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$ [with summary in English].
Vest. IGU 13 no.10:109-116 '58. (MIRA 11:6)
(Cobalt chloride)
(Crystallography)

5(3)

AUTHOR: Stroganov, Ye V

SOV/54-59-1-14/25

TITLE: On the Isomorphism of Crystals of Triphenyl Chlorides of Antimony and Bismuth (Ob izomorfizme kristallov trifenilkhloridov sur'my i vismuta)

PERIODICAL: Vestnik Leningradskogo universiteta. Seriya fiziki i khimii, 1959, Nr 1, pp 103-106 (USSR)

ABSTRACT: In the present paper the author investigated the crystalline substances $\text{Sb}(\text{C}_6\text{H}_5)_3\text{Cl}_2$ and $\text{Bi}(\text{C}_6\text{H}_5)_3\text{Cl}_2$ by the aid of X-ray structural analysis. On the basis of goniometric measurements he calculated the axial ratios of the crystal sections (Table 1). The Laue diagrams were plotted for both crystals. Approximate calculations of the identity periods of crystals were then carried out, as given in table 2. The exact values were determined from the Weissenberg and Yong X-ray diagrams (Table 3). The identity periods of both crystals are neither the same nor multiple, i.e. the simple characteristics of the isomorphous crystal series are not to be found there. They belong, however, to the same spatial group, their elementary cell volumes are duplicated and their multiplicity number duplicates as well. The explanation of the

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On the Isomorphism of Crystals of Triphenyl Chlorides of Antimony and Bismuth

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facts observed may according to V. D. Nefedov be found in the chemical as well as in the structural similarity of the substances. A closer explanation, however, calls for a more accurate structural analysis of both substances. The author thanks V. D. Nefedov for crystals put at his disposal. There are 4 tables and 4 Soviet references.

SUBMITTED: June 28, 1958

Card 2/2

AUTHOR: Stroganov, Ye. V. SOV/54-59-1-24/25

TITLE: Simplified Method of Fourier Series Calculation in Crystal Structure Analyses (Uproshchennaya metodika vychisleniya ryadov Fur'ye pri strukturnom issledovanii kristallov)

PERIODICAL: Vestnik Leningradskogo universiteta Seriya fiziki i khimii, 1959, Nr 1, pp 157-158 (USSR)

ABSTRACT: A new tabular device for the calculation of the Fourier series is given which is considerably simpler than the devices used hitherto (Refs 1,2). It consists in principle only of a card-board model with rectangular apertures. If e.g. the series of the type $\sum_h C(h) \cos 2\pi h x$ is examined the rectangular apertures are provided with numbers of the harmonics h . The apertures are provided with a division into N parts and in them the values for $\cos 2\pi h x$ in the interval $0 \leq x \leq N$ are plotted. By means of the values of the coefficients of $C(h)$, a logarithmic ruler, and the model with the plotted values for $\cos 2\pi h x$ all values of $C(h) \cos 2\pi h x$ for all x can be obtained in tabulated form. The summing up in the columns of this table yields the final values of the series for different x . The given method of calculation

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Simplified Method of Fourier Series Calculation in Crystal Structure Analyses

is especially suitable for the initial investigations of unknown structures. By means of this method it is possible to carry out the calculations for different N which facilitates the determination of the optimum figure of the N divisions of the structure to be investigated. The method described is especially suitable for students who must carry out practical work connected with harmonic analyses. There are 2 references.

SUBMITTED: March 17, 1958

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5 (4)

AUTHORS:

Andreyev, S. N., Stroganov, Ye. V.,
Khaldin, V. G.

SOV/79-29-5-75/75

TITLE:

A Subject of Discussion (V poryadke diskussii). On the Applicability of the Equation by A. F. Kapustinskiy for the Computation of the Energy of Crystal Lattices of Complex Salts (O primenimosti uravneniya A. F. Kapustinskogo dlya rascheta energii kristallicheskikh reshetok kompleksnykh soley)

PERIODICAL:

Zhurnal obshchey khimii, 1959, Vol 29, Nr 5, pp 1753 - 1757 (USSR)

ABSTRACT:

This is a discussion dealing with the suggestion made by K. B. Yatsimirskiy that the radius of the complex ion be introduced into Kapustinskiy's equation for the computation of lattice energies of tetrahedric and octahedric complex salts. For this purpose the ion radius was determined from the X-ray structural data for 13 such complex ions and compared with the calculations from the Kapustinskiy formula (Table). For salts with ions CrO_4^{-2} , SO_4^{-2} , ClO_4^- and MX_6^{+2} (of the structure type $\text{K}_2[\text{PTCl}_6]$) a good agreement

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is obtained. Thus, the equation by A. F. Kapustinskiy may be

A Subject of Discussion. On the Applicability SOV/79-29-5-75/75
of the Equation by A. F. Kapustinskiy for the Computation of the Energy
of Crystal Lattices of Complex Salts

well used for the determination of lattice energies of
tetrahedric and octahedric complex salts. The authors thank
K. P. Mishchenko for valuable critical remarks. There are
1 table and 11 references, 6 of which are Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet
(Leningrad State University)

SUBMITTED: May 30, 1958

Card 2/2

USCOMM-DC-61255

5(2)
 AUTHORS: Andreyyev, S. N., Khaldin, V. G., SOV/79-29-6-6/72
 Stroganov, Ye. V.

TITLE: Hydration Heats of the Ions $\text{Me}(\text{H}_2\text{O})_6^{+2}$ (O teplotakh gidratatsii ionov $\text{Me}(\text{H}_2\text{O})_6^{+2}$)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 6, pp 1798-1801 (USSR)

ABSTRACT: The investigation of the hydrate sheaths of ions in solutions was hitherto one of the most difficult problems, since physico-chemical methods are missing, which permit the investigation of the state of the water molecules isolated from the remaining mass of the solvent, which envelop the ions. The manifoldness of the chemical properties of the ions is another difficulty to be met with in this investigation. For the solution of this problem a many-sided investigation of the aquo-ions which are constituents of the crystal lattice of the crystal hydrates of different salts, and the investigation of the properties of the water molecules which envelop the ions in the crystal hydrates could be of decisive importance. On the basis of the papers by K. B. Yatsimirskiy (Refs 1-5) the authors arrived at the conclusion that the

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Hydration Heats of the Ions $\text{Me}(\text{H}_2\text{O})_6^{+2}$

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investigation of the hydration heats of the aquo-ions $\text{Me}(\text{H}_2\text{O})_6^{+2}$ initiated by this scientist had to be continued. For this purpose one should start with the crystal hydrates, the crystal lattices of which are already thoroughly investigated with respect to their structure. Also in the present case the data of a X-ray analysis confirmed the presence of the ions $\text{Me}(\text{H}_2\text{O})_6^{+2}$ in the molecule of the crystal hydrates. The addition energy of the water molecules onto the ions Me^{+2} as well as the hydration heat of the aquo-ions $\text{Me}(\text{H}_2\text{O})_6^{+2}$ can be determined if the primary integral heats of solution and energy of the crystal lattices of the salts are known. On the basis of the primary integral solution heats of the crystal hydrates of the metal perchlorides the standard formation heats of the following compounds were determined: $\text{Zn}(\text{ClO}_4)_2 \cdot 6\text{H}_2\text{O}$, $\text{Cd}(\text{ClO}_4)_2 \cdot 6\text{H}_2\text{O}$, $\text{Mn}(\text{ClO}_4)_2 \cdot 6\text{H}_2\text{O}$, $\text{Fe}(\text{ClO}_4)_2 \cdot 6\text{H}_2\text{O}$, $\text{Co}(\text{ClO}_4)_2 \cdot 6\text{H}_2\text{O}$, $\text{Ni}(\text{ClO}_4)_2 \cdot 6\text{H}_2\text{O}$. According to the equation of A. F. Kapustinskiy (Ref 10) the energy

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Hydration Heats of the Ions $Me(H_2O)_6^{+2}$

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values of the crystal lattices of the crystal hydrates of the perchlorates Mg, Zn, Cd, Mn, Fe, Co, and Ni were determined, the formation heats of the aquo-ions $Mg(H_2O)_6^{+2}$, $Zn(H_2O)_6^{+2}$, $Cd(H_2O)_6^{+2}$, $Mn(H_2O)_6^{+2}$, $Fe(H_2O)_6^{+2}$, $Co(H_2O)_6^{+2}$, $Ni(H_2O)_6^{+2}$, the energy values of the addition of water to the ions Me^{+2} in the gaseous phase and their hydration heats of the ions $Me(H_2O)_6^{+2}$. These results are in agreement with those obtained by K. B. Yatsimirskiy. It was shown that the hydration heats of the aquo-ions form about the half of the hydration heat of the ions Me^{+2} . The water molecules in the aquo-ion $Me(H_2O)_6^{+2}$ are considerably polarized. These aquo-ions are so-called "Aqua Acids" (Refs 17-19). The authors express their gratitude to A. F. Kapustinskiy and K. P. Mishchenko for valuable advice. There are 3 tables and 19 references, 16 of which are Soviet.

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Hydration Heats of the Ions $\text{Me}(\text{H}_2\text{O})_6^{+2}$

SOV/79-29-6-6/72

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED: May 30, 1958

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S/186/60/002/001/005/022
A057/A129

21,3100

AUTHORS: Vdovenko, V.M.; Stroganov, Ye.V.; Sokolov, A.P.; Zandin, V.N.
Deceased

TITLE: The structure of the hexahydrate of uranyl nitrate

PERIODICAL: Radiokhimiya, v. 2, no. 1, 1960, 24 - 31

TEXT: Using the method of Fourier series the authors determined the position of the uranium particles in the crystal of uranyl nitrate hexahydrate from x-ray data and suggest a model of the crystal structure. This structure is important for extraction of uranyl complexes, because crystal solvates are very similar to solvated ions [Ref. 1: Ye. V. Stroganov, S.N. Andreyev, N.I. Kozhina, Vest. LGU, 10, 2, 109 (1958)]. On the other hand structural data are of interest for the classification of this important group of complexes, and until the beginning of the present investigations the structure of uranyl nitrate hexahydrate was not determined. L. Pauling and R.G. Dickinson [Ref. 4: J. Am. Chem. Soc., 46, 1615 (1924)] assumed space-group symmetry D_{2h}^{17} - Cmc with uranium in position (c), and $y = 0.130$. Making allowance for the principle developed by R. Kern et al. [Ref. 6: Bull. Soc. fr. min. et crist., 81, 4, 103 (1958)] the present au-

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The structure of the hexahydrate of uranyl nitrate

thors determined a space-group C_{2v}^{12} - Cmc ($y = 0.130$, $z = 0$) with a quadruple regulated system of positions (a) for the uranium particles. The same space-group was discovered already in 1957 by K. Sasvári [Ref. 7: Acta Geologica Acad. Sci. Hung., 4, 3, 467 (1957)] by means of a piezoelectric effect. In the present experiments yellow-green uranyl nitrate hexahydrate crystals were used with the crystal form presented in Figure 1. The x-ray diffraction data were obtained from Laue or Weissenburg diffraction patterns and oscillation photographs. The structural data correspond to those obtained by Sasvári (see Table 1). By preparing the diffraction patterns using Fourier series and calculating the electron density, coordinates for all particles were determined. From the obtained values a projection of electron-density in the planes XY and XZ was plotted (Fig. 4). Uranium particles have a 7,000 maximum (see Fig. 4), while the 1,500 maxima correspond to the water molecules, and the 1,800 maxima (in XZ plane) are due to oxygen of the uranyl group. From the difference between the Fourier series and electron density projections (Fig. 4c) the accurate distance between the uranium particle and oxygen (in the uranyl group) was determined as 1.90 ± 0.13 Å. The maxima ~500 (Fig. 4c) and ~1,000 (Fig. 4a) correspond to the oxygen of the NO_3^- groups. The approximate coordinates are given in Table 2. The present results indicate that the hexahydrate of uranyl nitrate represents an ion compound compos-

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The structure of the hexahydrate of uranyl nitrate

ed of aqua-complex cations $[UO_2(H_2O)_6]^{2+}$ and NO_3^- anions. Thus the chemical formula should read $[UO_2(H_2O)_6](NO_3)_2$. The oxygen atoms of the nitrate group are in the vertex of an equilateral triangle (side length 2.66 Å). In the basis of the complex $[UO_2(H_2O)_6]^{2+}$ ions there is a linear uranyl group. The distance uranium - oxygen is here 1.90 Å. Two possibilities for the distribution of the water molecules are studied by the present authors. First variant: According to the data of Fourier series and table 2 the maxima of the electron density indicate that the water molecules 2, 3, 5 and 6 (Fig. 5) lie in a plane parallel to the equatorial plane at a distance of 0.3 Å, while the water molecules 1 and 4 are in an equal plane on the opposite side of the equator. The distance between 2 - 3 and 5 - 6 is 2.82 Å and between 1 - 2, 3 - 4, 4 - 5, and 6 - 1 it is 1.90 Å. The second, idealized, variant: This distribution is represented by the rotation of the water molecules 2, 3, 5 and 6 around the uranyl axis, assuming an equal distance of 2.30 Å between the water molecules. The fact that this distance is smaller than the radii of two water molecules (= 2.66 Å) can be explained by the strong deformation of the water molecule caused by the uranium field and formation of bonds between the molecules. Both proposed distribution variants are similar to the structure of uranyl aqua-complexes presented by I.I. Lipilina and O.Ya. Samoylov [Ref. 10: DAN SSSR, 98, 1, 99 (1954); Ref. 12: DAN SSSR, 122, 2,

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238 (1958)]. Equatorial distribution of particles around the uranyl ion was observed in other uranyl complexes by W.H. Zachariasen [Ref. 8: Acta Crystallogr., 7, 795 (1954)]. The NO_3^- ions form a reticulated layer parallel to the XY plane, while the $[\text{UO}_2(\text{H}_2\text{O})_6]^{2+}$ cations form linear chains parallel to the Z axis. The axial directions of the uranyl groups are in a plane parallel to YZ under an angle of $\sim 37^\circ$ to the Y axis. Each $[\text{UO}_2(\text{H}_2\text{O})_6]^{2+}$ cation is surrounded by 12 NO_3^- ions and 6 cations have one anion in common. The distance between the uranium atom and the water molecule in the aqua-complex cation was determined as 2.2 Å. Calculations of the spherical volume give a value for the packing coefficient of $K_{\text{spherical}} = 46.5\%$. Thus it is very likely that heating of the crystal causes rotation of the NO_3^- groups, and the following revolution around the axis vertical to the triangle (formed by this group). There are 5 figures, 2 tables and 12 references: 4 Soviet-bloc and 8 non-Soviet-bloc. X

SUBMITTED: July 2, 1959

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STROGANOV, Ye.V.; KOZHINA, I.I.; ANDREYEV, S.N.; KOLYADIN, A.B.

Crystal structure of crystal hydrate salts of transition metals.
Part 2: Structure of the crystal $\text{NiCl}_2 \cdot 4\text{H}_2\text{O}$. Vest. LGU 15 no.4:

130-137 '60. (MIRA 13:2)

(Nickel chloride crystals)

STROGANOV, Ye.V.; KOZHINA, I.I.; ANDREYEV, S.N.

Structure of crystals of $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$. Vest LGU 15 no.16:109-112 '60.
(MIRA 13:8)

(Nickel chloride)

23872
A/186/61/003/001/005/020
A051/A129

21.3100

AUTHORS: Vdovenko, V.M., Stroganov, Ye.V., Sokolov, A.P.

TITLE: The structural investigation of trihydrate and dihydrate uranyl-nitrate crystals

PERIODICAL: Radiokhimiya, v 3, no. 1, 1961, 19-23

TEXT: The authors have developed a method for taking roentgenograms of the single crystals of hygroscopic substances and have produced $\text{UO}_2(\text{NO}_3)_2 \cdot 3\text{H}_2\text{O}$ and $\text{UO}_2(\text{NO}_3)_2 \cdot 2\text{H}_2\text{O}$ crystals. The main characteristics of the uranyl nitrate trihydrate and dihydrate lattice have been established. The present article deals with the first half of a study of the aqua-complex compounds of uranyl through the structural investigation of trihydrate and dihydrate of uranyl nitrate. The authors prove that uranyl nitrate dihydrate belongs to the monoclinic syngony rather than to the rhombic syngony assumed by Vasil'yev (Ref. 5). The $\text{UO}_2(\text{NO}_3)_2 \cdot 3\text{H}_2\text{O}$ single crystals were produced according to Colani's method (Ref. 6) by evaporating and cooling uranyl nitrate solutions.

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A051/A:29

The structural investigation of trihydrate ...

containing nitric acid from 36 to 53%. $UO_2(NO_3)_2 \cdot 3H_2O$ single crystals were produced by dissolving finely-crystalline uranyl nitrate dihydrate in 98% HNO_3 while heating slightly. Fig 1 is a diagram of the apparatus used for photographing the crystals. Lauegrams and roentgenograms of oscillations were taken using the KPOH-2 (KRON-2), PKP (RKV), PKOP (RKOP) and C-25 (S-25) type chambers. Dejongograms were obtained on a roentgenogoniometer according to De Jong. Weissenbergo grams were taken on a RG1K-1 and S-55 roentgenogoniometers. Roentgenograms of all types were taken on tubes with copper anticathodes, excepting certain lauegrams taken on silver emission. The computation of the α and β -angles for the trihydrate of uranyl nitrate was conducted by using the dejongograms according to Burger's method (Ref 7) of the "displacement" of planes. Angle γ was computed according to the formula: $\cos \gamma = \cos \alpha \cdot \cos \beta - \sin \alpha \cdot \sin \beta \cdot \cos \gamma$, obtained by studying the elementary triclinical cell and the plane of the reverse lattice normal to the side c. Burger's formula (Ref 7) is said to be more complex. The crystallographic investigations of the dihydrate of uranyl nitrate were conducted on a bi-annular goniometer (Federov). The obtained coordinates of the planes and the corresponding hkl indices are given in table 1. The dimensions of the

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elementary cell $UO_2(NO_3)_2 \cdot 2H_2O$ were obtained from the oscillation roentgenograms. The obtained values characterizing the elementary cells of both investigated crystals are given in table 2. The complete solution of the structures of the two crystals based on the analysis of the reflex intensities using the calculations of Patterson's functions and the electronic density are to be published in a later issue. There are 7 figures, 2 tables and 8 references: 4 Soviet-bloc, 4 non-Soviet-bloc.

Table 1:

Crystallographic symbols and coordinates of the faces of uranyl nitrate dihydrate.

hkl	β	γ
(100)	90°	90°
(110)	30°	90°
(110)	330°	90°
(100)	270°	90°
(110)	210°	90°
(110)	150°	90°
(201)	90°	134°30'
(001)	90°	199°
(223)	9°	143°
(223)	171°	143°

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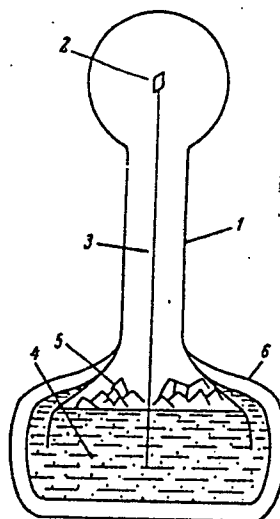
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The structural investigation of trihydrate ...

Figure 1:

Quartzite ampoule with crystal
prepared for photography:

- 1- quartzite ampoule, 2- crystal,
- 3- glass thread, 4- plastilene,
- 5- investigated substance,
- 6- Mendeleyev paste.



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23012

The structural investigation of trihydrate ...

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A051/A129

Table 2: Data on the elementary cells of $\text{UO}_2(\text{NO}_3)_2 \cdot 3\text{H}_2\text{O}$ and $\text{UO}_2(\text{NO}_3)_2 \cdot 2\text{H}_2\text{O}$

Crystallhydrate	syng. sy	Laue class	diffract. symbol	size of elementary cell (in Å)	angles of elementary cell			subst. density (in g/cm ³)	No of formula units
					α	β	γ		
$\text{UO}_2(\text{NO}_3)_2 \cdot 3\text{H}_2\text{O}$	trichlin.	3	3P	$\begin{cases} a=5.73 \\ b=6.99 \\ c=7.21 \end{cases}$	105°	99.5°	82°	2.93	1
$\text{UO}_2(\text{NO}_3)_2 \cdot 2\text{H}_2\text{O}$	monoclinic	2/m	2/mC-/-	$\begin{cases} a=10.52 \\ b=5.93 \\ c=6.95 \end{cases}$	90°	72°	90°	3.35	2

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24.7200

16.6800

S/045/61/000/003/000/008
D201/D395

AUTHORS:

Strojanov, Ye. V., Solov'ev, V. Ye. and Men'shikov, G. G.

TITLE:

Computer for calculating a trigonometric series in X-ray structure analysis

PERIODICAL:

Leningrad Universitet Vestnik Seriya matematiki, mekhaniki i astronomii, no. 3, 1961, 169-171

TEXT: In designing the computer, the following goals were set: to considerably facilitate and speed up computations, and to make it so simple that it could be constructed in the laboratory. The machine has the function of adding one-dimensional series of type

$$\sum_{h=1}^M F(h) \cos \frac{360}{N} hx \quad \text{or} \quad \sum_{h=1}^M F(h) \sin \frac{360}{N} hx$$

for $x = 0, 1, 2, \dots, N/4$. It is easy to provide for the separate addition of even ($h=2n$) and odd ($h=2n+1$) harmonics. A model of the machine was constructed for calculating a cosine-series with $M = 8$.
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Computer for calculating...

S/045/61/000/003/008/008
D201/D305

and $N = 60$. The operating principle is as follows. The sought-for sums are found by measuring the voltage of a system of series-connected capacitors. The voltage of each capacitor should correspond to the value of $F(h)\cos(6hx)^0$. For stabilization of the capacitors, 2 voltage stabilizers were series-connected in such a way that the 3 output terminals of the instrument corresponded to voltage values of 100, 0 and -100 v. The capacitors were charged by potentiometers, consisting each of two series-connected resistors r_{xh} and R . A stabilized voltage of $|v| = 100$ v was applied to the terminals of the potentiometers, as a result of which the voltage-drop on R was found to be $|v| \cos(6hx)^0$. Negative series-coefficients were accounted for by a change of poles. For computing series with harmonics not higher than the eighth, 8 capacitors (capacity = 10μ farad) were used. The coefficients $F(h)$ were given by 8 resistors R . The potentiometers and capacitors were connected and disconnected by relays. The values and signs of the series-coefficients are applied to the machine by means of movable contacts on R , and by tumblers at the output of the main unit (for the signs). The rate of computing the sum of a series for 15 positions is of the order of 2 mins.

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Computer for calculating

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D201/D305

This rate does not depend on the number of harmonics involved, as the adding operation takes place instantly. The computation error does not exceed 2%. The model machine was successfully used for Fourier-syntheses by students at the Leningradskiy gosudarstvennyy universitet (Leningrad State University) in their laboratory practice. There is 1 figure

X

Card 3/3

STROGANOV, Ye.V.; SOLOV'YEV, V.Ye.; MEN'SHIKOV, G.G.

Computer for calculating trigonometric series in X-ray diffraction
examination [with summary in English]. Vest. LGU no.13:169-171
'61. (MIRA 14:7)
(X-rays--Diffraction) (Electronic calculating machines)

STROGANOV, Ye.V.; ANDREYEV, S.N.; KOZHINA, I.I.; SOLOV'YEV, V.Ye.

Crystal structure of crystal hydrates of transition metal salts
Part 3: $\text{CoBr}_2 \cdot 6\text{H}_2\text{O}$ crystal structure. Vest LGU 16 no.16:114-
119 '61. (MIRA 14:8)

(Cobalt halides)
(Crystal lattices)

VDOVENKO, V.M.; STROGANOV, Ye.V.; SOKOLOV, A.P.; LUNGU, G.

Structure of uranyl nitrate dihydrate. Radiokhimiya 4 no.1:59-66
'62. (MIRA 15:4)

(Uranyl nitrate)

SHCHUKAREV, S.A.; STROGANOV, Ye.V.; ANDREYEV, S.N.; PURVINSKIY, O.F.

Crystal structure of the crystal hydrates of transition metal
salts. Structure of $\text{CoI}_2 \cdot 6\text{H}_2\text{O}$. Zhur.strukt.khim. 4 no.1:63-66
Ja-F '63. (MIRA 16:2)

1. Leningradskiy gosudarstvennyy universitet.
(Cobalt iodides) (Crystallography)

VDOVENKO, V.M.; STROGANOV, Ye.V.; SOKOLOV, A.P.

Structure of uranyl nitrate trihydrate. Radiokhimiia 5
no.1:97-103 '63. (MIRA 16:2)
(Uranyl nitrate crystals)

ANDREYEVA, M.V.; STROGANOV, Ye.V.

Spectrophotometric study of ethanol solutions of CoCl_2 and CoBr_2
with a high concentration of Cl^- and Br^- . Dokl. AN SSSR 151
no.3:567-569 J1 '63. (MIRA 16:9)

1. Leningradskiy tekstil'nyy institut im. S.M.Kirova. Predstavleno
akademikom I.I.Chernyayevym.
(Cobalt halides--Spectra)

GUSEV, S.I., KUMOV, V.I., STROGANOVA, A.M.

Use of β -oxynaphthoic aldehyde in analytical chemistry. Part 1.
Gravimetric and volumetric semimicro determination of magnesium.
Zhur.anal.khim. 10 no.6:349-354 N-D '55. (MLRA 9:3)

1. Molotovskiy gosudarstvennyy meditsinskiy institut.
(Aldehydes) (Magnesium)

Stroganova, A. M.

Use of 2-hydroxy-1-naphthalaldehyde in analytical chemistry. I. Gravimetric and volumetric semimicro determination of magnesium. S. I. Gusev, V. I. Kuzov, and A. M. Stroganova. *J. Anal. Chem.* 1955, 10, 335-41. (Russian). Translation. See 4-50, 7654e

chem. 3

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0006

1. STROGANOVA, A. S.
2. USSR (600)
4. Mammals - Stalingrad Province
7. Mammal fauna of the irrigated lands and afforested areas of the Valuyki Experimental-Soil. Improvement Station (Stalingrad Province). Trudy Zool inst. No. 11 1952.
9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

STROGANOVA, A.S.

Mammals of the steppe and semiarid trans-Volga region. Trudy
Zool. inst. 16:30-116 '54. (MIRA 8:6)
(Caspian Depression--Mammals) (Volga Valley--Mammals)

STROGANOVA, A.S.

Sciuridae in the southern part of Yunnan Province (China) [with
summary in English]. Zool. zhur. 36 no.11:1761-1769 N '57.
(MLRA 10:11)

1. Zoologicheskii institut AN SSSR (Leningrad).
(Yunnan Province--Squirrels)

STROGANOVA, A.S.

Ecological study of the Caucasian squirrel *Sciurus (Temes) anomalus*
Güld. 1792. Trudy zool. inst. 25:304-320 '58. (MIRA 11:8)
(Caucasus--Squirrels)

VERESHCHAGIN, N.K.; GEPTNER, V.G.; STROGANOVA, A.S.

Time and causes of extinction of the Caucasian marmot. Nauch.dokl.
vys.shkoly; biol.nauki no.2:36-38 '59. (MIRA 12:6)

1. Rekomendovana kafedroy zoologii pozvonochnykh Moskovskogo
gosudarstvennogo universiteta im. M.V.Lomonosova.
(Caucasus--Marmots, Fossil)

STROGANOVA, ANNA S. (USSR)

"Character of biology of Citellus relictus and methods of determining its population density in Russia"

report presented at the Intl. Symposium on Methods of Theriological Investigation. Brno, Czech.,
4 Sept. 1960

26 Aug

STROGANOVA, A.S.; CHZHU DIN' [Chu Tin]

Systematic position of the relict suslik (*Citellus relictus* Kargchik.)
and materials on its ecology in the Kuuluk-Tau (central Tien Shan).
Trudy Zool. inst. 29:81-100 '61. (MIRA 14:6)
(Kuuluk-Tau--Susliks)

L 16051-66 EWP(e)/EWT(m)/EWF(t) IJP(c) JD/JG

ACC NR: AP6005515

SOURCE CODE: UR/0080/66/039/001/0013/0020

AUTHOR: Markovskiy, L. Ya.; Vekshina, N. V.; Kondrashev, Yu. D.; Stroganova, I. M.

ORG: none

TITLE: Ternary compounds in the beryllium-boron-carbon system

SOURCE: Zhurnal prikladnoy khimii, v. 39, no. 1, 1966, 13-20

TOPIC TAGS: beryllium compound, boron compound, carbide, crystal structure

ABSTRACT: To study the reaction of beryllium with boron and carbon, powder mixtures of the components were sintered at 1200-2000°C, and the products were subjected to x-ray and chemical phase analysis. The data showed the existence of two beryllium borocarbides, BeC_2B_2 and $\text{BeC}_2\text{B}_{12}$. The structure of BeC_2B_2 , (studied by the single crystal method) is characterized by a hexagonal system, Laue class $\frac{6}{m}mm$, and lattice constants $a = 10.84$ and $c = 6.18$. The structure of $\text{BeC}_2\text{B}_{12}$, (studied by the powder method) belongs to the $\text{B}_4\text{C}(\text{B}_{12}\text{C}_3)$ structural type. The lattice constants are $a = 5.615$, $c = 12.28 \text{ \AA}$, $c/a = 2.187$. It is shown that in contrast to alkaline earth and rare earth borocarbides, beryllium borocarbides are chemically stable compounds and

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UDC: 546.45'27'26

L 16051-66

ACC NR: AP6005515

do not undergo hydrolytic decomposition. Ternary compounds of beryllium with boron and carbon form from the elements and also as a result of the reaction of beryllium borides, beryllium carbide Be_2C , and boron carbide with one another as well as with elemental carbon, boron, and beryllium respectively. Orig. art. has: 1 figure and 6 tables.

SUB CODE: 07/ SUBM DATE: 07Oct63/ ORIG REF: 011/ OTH REF: 009

Card 2/2

1. "ТВОЧЬИМ", I.P.

2. USSR (600)

4. Oriental Studies

7. Eastern sciences section. Vest. Len. un. 7. no. 3. 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

007/10 17-1-30/40
AUTHORS: Krinchik, G. S. and Stroganova, I. S.

TITLE: Magneto-optical Properties of Iron, Nickel and Cobalt in the Ultraviolet Range (Magnitoopticheskiye svoystva zheleza, nikelya i kobal'ta v ul'trafioletovoy oblasti)

PERIODICAL: Fizika metallov i metallovedeniye, Vol 7, Nr 3, pp 460-461 (USSR)

ABSTRACT: Magneto-optical measurements were carried out in the ultraviolet portion of the spectrum in order to widen the frequency range in which the dynamic properties of ferromagnets are investigated. The effect of change in intensity of reflected light on re-magnetizing the specimen was measured in the visible as well as in the infrared region by Krinchik (Ref.1) and Krinchik et alia (Ref.2). The equipment was laid out according to the plan given by Krinchik (Ref.1), but instead of the photoresistor FSK-1, the photo-intensifier FEU-18 and the photoelectric cell STsV-4 were included. The spectrograph ISP-22 provided with a mercury quartz lamp PKK-4 served as a monochromator. Nickel and cobalt specimens were Card 1/2 polished mechanically and fixed between the terminals of small

SOV/126-7-3-32/44

Magneto-optical Properties of Iron, Nickel and Cobalt in the Ultraviolet Range.

electro-magnets. In measurements using Armco iron part of the magnetic circuit surface was polished and served as a specimen. The authors obtained graphs for the dependence of the effect on the current in magnetizing coils for Fe, Co and Ni in the visible light region. Results obtained in the magnetic saturation region for a few intensive mercury lines are given in the table on p 460. Values of M_1 and M_2 have been calculated by formulae obtained by Krinchik (Ref.1), and the optical constants are taken from Minor (Ref.3). There is 1 table, and 5 references of which 2 are Soviet, 2 English and 1 German.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: May 26, 1958 ✓

Card 2/2

KOROVINA, A.; STROGANOVA, L., redaktor; CHERTOVA, Zh., tekhnicheskii
redaktor.

[Moscow zoological park] Moskovskii zoopark. Moskva, Gos. izd-vo
izobrazitel'nogo iskusstva (IZOGIZ), 1954. [unpaged] (MLRA 7:9)
(Moscow--Zoological gardens) (Zoological gardens--Moscow)

STROGANOVA, L., redaktor.

[Crimea] Kryn. [Moskva, Izogiz, 1955] 30 illus. postcards.
(Crimea---Views) (MLRA 8:8)

STROGANOVA, L., redakter.

[Moscow] Moskva. Moskva, Gos. izd-vo izobrazitel'nogo iskusstva,
1955. 77 p. (MIRA 9:4)

(Moscow--Description)

~~STROGANOVA, L.~~ redaktor

[In the Tien Shan] V gorakh Tian'-Shania. [n.p., Izogiz, 1956]
15 post cards (in portfolio) (MIRA 10:4)
(Tien Shan--Views)

STROGANOVA, I., redaktor

[Through Karelia] Po Karelii. [n.p., Izogiz, 1956] 15 post
cards (in portfolio). (MLBA 10:5)
(Karelia--Views)

STROGANOVA, L., red.

[Stalingrad] Stalingrad. [Moskva, Izogiz, 1958] 12 post cards
(in portfolio) (MIRA 11:10)
(Stalingrad—Views)

FILATOV, I.K., inzh.; STROGANOVA, L.I., inzh.; MOROZOVA, T.V., inzh.

Insulating rail bond with inserts made with polymer materials.
Vest.TSNIIMPS 21 no.7:58-61 '62. (MIRA 15:12)
(Electric insulators and insulation) (Plastics)

NICHIPOROVICH, A.A.; STROGONOVA, L.Ye.; CHMORA, S.N.; VLASOVA, M.P.;
KURSANOV, A.L., otv.red.; SHAROVATOVA, I.B., red.isd-va;
VOLKOVA, V.M., tekhn.red.

[Photosynthetic activity of cultivated plants; methods and
object of records kept in connection with the formation of
grain] Fotosinteticheskaya deiatel'nost' rastenii v posevakh;
metody i zadachi ucheta v svyazi s formirovaniem urozhaev.
Moskva, Izd-vo Akad.nauk SSSR, 1961. 132 p.

(MIRA 14:4)

(Photosynthesis)

6

STROGANOVA, M.F.; DONIGEVICH, M.I., kand.med.nauk

Some measures to improve the medical attendance of women in the
Mordovian A.S.S.R. Zdrav. Ros. Feder. 5 no.8:22-29 Ag '61.
(MIRA 14:10)

1. Ministr zdravookhraneniya Mordovskoy ASSR (for Stroganova).
2. Glavnyy akusher-ginekolog Ministerstva zdravookhraneniya
Mordovskoy, ASSR (for Donigovich).
(MORDOVIA--PRENATAL CARE)

MARGOLINA, V.L.; STROGANOVA, M.N.

Jupiter in 1950. Biul.VAGO no.18:37-40 '56.

(MLRA 10:1)

1. Moskovskoye otdeleniye Vsesoyuznogo astronomo-geodezicheskogo
obshchestva, otdel planet i luny.
(Jupiter (Planet))

STROGANOVA, N.P.

Some characteristics of cardiovascular reactions in experimental
hypertension in old animals. Vop. geron. i geriat. 4:67-72 '65.
(MIRA 18:5)

1. Institut gerontologii AMN SSSR, Kiyev.

STROGANOVA, N.S.

~~Origin and development of male genital cells in mammals. Izv. Akad.~~
nauk SSSR, Ser. Biol no. 6:37-48 Nov-Dec 1952. (CML 23:3)

1. Department of Genetics and Selection, Moscow Order of Lenin
State University imeni M. V. Lomonosov.

STROGANOVA, N. S.

USSR/Medicine - Immunology

21 May 52

"Immunological Activity of Cells in the Central Nervous System," N. S. Stroganova, Moscow State University N. V. Lomonosov

"Dok Ak Nauk SSSR" Vol LXXXIV, No 3, pp 595-597

Using Trypan blue, showed how the central nervous system of adult rabbits, through the action of leucocytes which phagocytize the dyestuff, rids itself of foreign substances that reach it by the way of the blood stream. The mechanism of cell immunity which has been described, while effective in the brain of adult animals, is totally absent in the brain of newly born rabbits. Presented by Acad A. I. Abrikosov, 27 Mar 52. 225T18

STROGANOVA, N.S.

Renal capillary permeability for colloids in newborn animals.
Doklady Akad. nauk SSSR 84 no.4:801-804 1 June 1952. (CLML 25:4)

1. Presented by Academician A. I. Abrikosov 27 March 1952. 2. Soil
Biology Institute, Moscow State University imeni M. V. Lomonosov.

Stachurski, S. S.

Spermatogenesis

Amitosis in spermatogenesis of mammals. Dokl. AN SSSR 85, No. 4, 1952.

Monthly List of Russian Accessions, Library of Congress, November 1952. Unclassified.

ISAYEV, S.I.; MERKUR'YEVA, Ye.K.; STROGANOVA, N.S.; FEPGINSON, N.I.

Critique of new concepts in science from the position of old concepts;
discussion on N. V. Turbin and M. D. Ivanov article. "Izv. Akad. nauk
SSSR; Ser. Biol. no.2:34-48 Mar-Apr 1953. (GIML 24:3)

STROGANOVA, N.S.

Origin of male sex cells in the light of Michurin biological science. Vest.
Mosk. un. 8 no.8:23-43 Ag '53. (MLRA 6:11)

1. Kafedra genetiki.

(Spermatozoa)

STROGANOVA, N.S.

Certain problems of growth histo-physiology of animals. Ark h. anat.,
Moskva 30 no.2:78-85 Mar-Apr 1953. (CML 24:3)

1. Of the Department of Genetics (Head -- Prof. S. I. Isayev), Soil
Biology Faculty of Moscow State University imeni M. V. Molotov.

STROGANOVA, N.S., kand. biol. nauk; SHEINA, Ye.A.

Nutrition and growth of the sturgeon *Acipenser stellatus* in
aquariums and basins. Sbor. trud. Mosk. zoop. no.1:119-131 '56.
(Sturgeons) (Fish culture) (Aquariums) (MIRA 10:11)

STROGANOVA, N.S.; CHUMAK, M.G.

Histochemical study of cellular and noncellular structures
in male sex glands of animals. Vest. Mosk. un. Ser. biol.,
pochv., geol., geog. 13 no.2:49-54 '58. (MIRA 11:9)

1. Moskovskiy gos. universitet, Kafedra genetiki i selektsii.
(Generative organs, Male) (Physiological chemistry)

STROGANOVA, N.S.; MONAKHOVA, M.A.

Cytomorphological observations on spermatogenesis in a species of
tyroglyphid mites. TSitologiya 6 no.1:66-72 Ja-F '64. (MIRA 17:9)

1. Kafedra genetiki i seleksii Moskovskogo universiteta.

STROGANOVA, N.E., MONAKHOVA, M.A.

Formation of functional structures on the surface of spermatocyte nuclei in some species of Tyroglyphidae. Dokl. AN SSSR 157 no.5:1213-1215 Ag '64. (MIRA 17:9)

1. Moskovskiy gosudarstvennyy universitet. Predstavleno akademikom A.N. Bakulevym.

LEHOGAROVA, N.S.; MOHAKHOTA, M.A.

Formation of mitochondria from the cell membrane in the spermatogonia of the grain mite. Dokl. AN SSSR 140 no.4:887-889 F 145.

(MIRA 18:2)

1. Moskovskiy gosudarstvennyy universitet. Submitted October 16, 1964.

STROGANOVA, I.S.

Globular accumulations of cells in the seminal ducts of *Rana temporaria*. Vest. Mosk.un. Ser. 6: Biol., pochv. 20 no.5:25-31 S-O '65. (MIRA 18:11)

1. Kafedra genetiki i seleksii Moskovskogo universiteta.
Submitted January 24, 1964.

STROGANOVA, N. S.

USSR/Inorganic Chemistry. Complex Compounds.

C

Abs Jour : Ref Zhur - Khimiya, No. 8, 1957, 26431.

Author : Ryabchikov, D.I., Sklyarenko, Yu.S. and
Stroganova, N.S.

Inst :

Title : "Anomal" Valences of Rare Earth Elements in
Processes of Their Separation. Report 1.
Electrolytic Reduction of Ytterbium.

Orig Pub : Zh. neorgan. khimii, 1956, 1, No. 9, 1954 -
1967.

Abstract : The influence of various factors on the yield
of Yb at the electrolytic reduction of a
solution containing ytterbium acetate $\text{Yb}(\text{Ac})_3$
and potassium citrate K_3Cit with a Hg cathode
and Pt anode was studied. Dry K_3Cit was
added to the solution of $\text{Yb}(\text{Ac})_3$, pH was ad-
justed by adding CH_3COOH or KOH , the

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USSR/Inorganic Chemistry. Complex Compounds.
Abs Jour : Ref Zhur - Khimiya, No. 8, 1957, 26431.

electrolysis was carried out 1 hour with a cathode current density of 0.05 a per sq. cm and 12 v, after which the formed amalgam of Yb was detached and decomposed with HCl. The maximum yield of Yb is at pH=6.0, it decreases gradually with the drop of acidity to pH=4.0 and drops sharply at pH=3.0. The optimum cathode density of the current is 0.025 a per sq.cm, and with its rise to 0.25 a per sq.cm the yield of Yb decreases somewhat. The temperature rise from -5 to +50 results in an insignificant rise of the yield, but the further temperature rise to 500 decreases the yield more than twice. The electrolysis can be carried out from an acetate solution containing no citrate

C

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Abs Jour : Ref Zhur - Khimiya, No. 8, 1957, 26431.

ions, but the best results have been obtained at the molar ratio $\text{Yb}_2\text{O}_3 : \text{K}_3\text{Cit}$ 1 : 2. The yield increases with the increase from 0.25 to 2.00% of Yb_2O_3 , and it increases especially rapidly in the range from 0.5 to 1.0%. The obtained results are explained by the presence of a series of mutually connected equilibria in the system: dissociation of $\text{Yb}(\text{Ac})_3$, formation of the complex $\text{K}_3\text{Yb}(\text{Cit})_2$ and its dissociation, reduction of Yb^{3+} to Yb^{2+} and, at last, reduction of Yb^{2+} to Yb (amalgam). The forming amalgam decomposes partially. The stability of the amalgam rises with the decrease of the acidity of the medium, but the stability of

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USSR/Inorganic Chemistry. Complex Compounds.

C

Abs Jour : Ref Zhur - Khimiya, No. 8, 1957, 26431

the complex citrate of Yb rises simultaneously; in consequence of the action of these opposite factors, a maximum appears on the dependence curve of the yield on pH. The influence of the temperature is analogous: the dissociation of the anion $[Yb(Cit)_2]^{3-}$ rises together with the temperature and shifts the equilibrium chain $Yb^{3+} \rightleftharpoons Yb^{2+} \rightleftharpoons Yb^0$ (amalgam) to the right, but above 50 the stability of amalgam drops sharply. The yield reaches 98.2% of Yb under optimum conditions, which are as follows: pH=6, temperature 50, solution concentration 2.0% of Yb_2O_3 , molar ratio $Yb_2O_3 : K_2Cit$ 1 : 2.

Card 4/4

5(2)

AUTHORS:

SOV/78-4-9-9/44
Ryabchikov, D.I., Sklyarenko, Yu. S., Stroganova, N. S.

TITLE:

The Electrolytic Reduction of Samarium

PERIODICAL:

Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 9,
pp 1985-1989 (USSR)

ABSTRACT:

A previously published paper by the authors (Ref 1) treats of the electrolysis of ytterbium acetate on a mercury electrode in the presence of potassium citrate. In connection with certain interrelations found thereby the electrolysis of samarium acetate was investigated in the present article, as but few references on this subject are found in publications (Refs 2-7), and low yields (maximum 47%) are stated in these reports. The following relations were investigated. 1) The influence of the acidity on the yield (Table 1, Fig 1). It was found that Sm is not reduced below pH 3.0, that the reduction reaches a maximum between pH 3.5 and 4.5, and that a pH of over 4.5 does not influence the reaction. 2) The influence of the potassium citrate concentration (Table 2, Fig 2) was found to be analogous to that in ytterbium reduction: the maximum yield was obtained at a ratio $Me^{3+} : Cit^{3-} = 1 : 2$ and dropped at high citrate concentrations owing to the formation of complex ions

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The Electrolytic Reduction of Samarium

SOV/78-4-9-9/44

$[\text{Me}(\text{Cit})_2]^{3-}$. 3) The influence of the initial concentration of Sm (Table 3, Fig 3) was evident in yields rising with increasing concentration. 4) The influence of temperature was also investigated (Table 4, Fig 4). A temperature rise produced a lower yield. Thus, a considerable similarity to ytterbium was found, and an 86.6% yield of samarium attained. There are 4 figures, 4 tables, and 7 references, 1 of which is Soviet.

SUBMITTED: June 7, 1958

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5(2) 5.2300

66297

SOV/78-4-12-5/35

AUTHORS: Ryabchikov, D. I., Sklyarenko, Yu. S., Stroganova, N. S.

TITLE: Electrolytic Reduction of Europium

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 12,
pp 2682-2687 (USSR)

ABSTRACT: In an earlier paper (Refs 1, 2) the authors put forward various assumptions on the chemical processes taking place in the electrolytic production of ytterbium- and samarium amalgam from the acetates of these rare earths in the presence of potassium citrate. The assumptions proved to be useful since the yield of these rare earths could thus be increased. By this process europium can be produced easily and with sufficiently high yield. However, its reduction was studied especially to indicate the common character of this process for all three rare earths, and to detect individual differences. The investigations concerned the following problems: 1) the effect of the electrolyte acidity upon the yield in europium (Table 1, Fig 1). With pH = 3 no Eu amalgam is formed as yet. Between 3.0 - 3.8 the yield rapidly increases; afterwards it slowly rises up to a pH-value of 5.0; the further pH-rise does not affect it. 2) The effect of the addition of potassium citrate upon the Eu

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Electrolytic Reduction of Europium

SOV/78-4-12-5/35

yield (Table 2, Fig 2). Data indicate that Eu amalgam, but, only with a yield of about 70%, can be produced from the acetate solution even without any addition of potassium citrate. The yield is independent of the citrate concentration within a wide range ($\text{Eu}^{3+} : \text{Cit}^{3-}$ between 1 : 2 and 1 : 6). 3) The effect of the initial concentration of Eu on the yield (Table 3, Fig 3). The yield is increased but little by higher Eu concentration. 4) The effect of temperature on the Eu yield (Table 4, Fig 4). Maximum yield is attained between 0 and 5°, further temperature rise reduces the yield. Corresponding data for Yb, Sm, and Eu are listed in tables 5-8. They indicate that under equal conditions of electrolysis the yield increases in the order Sm - Yb - Eu. A modification of the experimental conditions has the same effect on all the three elements so that the chemical processes with the three elements are likely to follow the same scheme. The intensity of the effect of the individual factors, however, is different. Yb offers maximum yield at an optimum pH whereas the yield of Sm and Eu is fairly independent of the pH within a wide range. For Sm and Yb there exists an optimum citrate concentration, while the Eu yield is hardly affected by the latter. The authors are studying the possibilities of employing these deviations of the behavior of the three rare

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Electrolytic Reduction of Europium

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earths for an electrolytic separation of these elements. There are 4 figures, 8 tables, and 6 references, 4 of which are Soviet.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo
Akademii nauk SSSR
(Institute of Geochemistry and Analytical Chemistry imeni
V. I. Vernadskiy of the Academy of Sciences, USSR)

SUBMITTED: July 12, 1958

Card 3/3

ALIMARIN, I.P.; BILIMOVICH, G.N.; BUSEV, A.I.; VAYNSHTEYN, E.Ye.; VOLYNETS, M.P.; GORYUSHINA, V.G.; DYMOV, A.M.; YELINSON, S.V.; ZVIAGINTSEV, O.Ye.; KOLOSOVA, G.M.; KORCHEMNAYA, Ye.K.; LEBEDEV, V.I.; MALOFEYeva, G.A.; MELENT'YEV, B.N.; NAZARENKO, V.A.; NAZARENKO, I.I.; PETROVA, T.V.; POLUEKTOV, N.S.; PONOMAREV, A.I.; RYABUKHIN, V.A.; STROGANOVA, N.S.; CHERNIKHov, Yu.A.; VINOGRADOV, A.P., akademik, otv. red.; RYABCHIKOV, D.I., doktor khim. nauk, prof., otv. red.; GUS'KOVA, O., tekhn. red.

[Methods for the determination and analysis of rare elements] Metody opredeleniia i analiza redkikh elementov. Moskva, 1961. 667 p.

(MIRA 14:7)

1. Akademiya nauk SSSR. Institut geokhimi i analiticheskoy khimii.
(Metals, Rare and minor)

RYABCHIKOV, D.I., prof., otv. red.; VAGINA, N.S., kand. tekhn.
nauk, red.; KORCHEMNAYA, Ye.K., kand. khim. nauk, red.;
RUSANOV, A.K., doktor tekhn. nauk, red.; RYABUKHIN, V.A.,
kand. khim. nauk, red.; SENYAVIN, M.M., kand. khim. nauk,
red.; SKLYARENKO, Yu.S., kand. khm. nauk, red.; STROGANOVA,
N.S., nauchn. sotr., red.; MAKUNI, Ye.V., tekhn. red.

[Rare-earth elements] Redkozemel'nye elementy. Moskva, Izd-
vo AN SSSR, 1963. 391 p. (MIRA 17:2)

1. Akademiya nauk SSSR. Institut geokhimii i ~~analiticheskoy~~ analiticheskoy
khimii.

STROGANOVA, N.S.

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POPOV, N.S., kand.ekon.nauk; SKVORTSOVA, N.T., kand.ekon.nauk;
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[Economics, organization, and planning of municipal services]
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(Municipal services)

ACC NR: AP7004988

SOURCE CODE: UR/0048/66/030/009/1511/1513

AUTHOR: Rabotkin, V.L.; Stroganova, T.N.

ORG: Tomsk Polytechnic Institute im. S.M. Kirov (Tomskiy politekhnicheskiy institut)

TITLE: Electroluminescence of BaS base phosphors /Report, Fourteenth All-Union Conference on Luminescence (Crystal Phosphors) held at Riga, 16-23 Sept. 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no.9, 1511-1513

TOPIC TAGS: electroluminescence, photoluminescence, roentgenoluminescence, barium compound, sulfide, copper, bismuth, manganese

ABSTRACT: The authors investigated the electro-, photo- and roentgenoluminescence of copper, bismuth and manganese activated barium sulfide phosphors. The phosphors were prepared by the Lenard-Zhirov technique: a mixture of BaS, the activator, a flux, and reducing agent was heated for 30 minutes at 1200° C with limited access of air. X-ray studies showed that the phosphors had the cubic structure of the BaS lattice with traces of a second phase consisting of BaSO₄ and the sulfide of the activator. The cubic BaS structure was obtained, however, only when the initial mix included a flux and was heated above 900° C. The activator concentrations were varied over the range from 10⁻⁴ to 10 percent by weight. The ac and dc electroluminescence spectra, the photoluminescence spectrum excited at 3660 Å, and the roentgenoluminescence

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ACC NR: AP7004988

spectrum excited at 1.79 Å were recorded for each specimen. For most of the specimens the electro-, photo- and roentgenoluminescence spectra were nearly identical. The luminescence properties of the BaS phosphors were found to be rather similar to those of the well-investigated ZnS phosphors. The BaS phosphors, however, require a higher voltage for excitation of electroluminescence than do the ZnS phosphors, and the electroluminescence brightness of the BaS:Mn phosphors decreased with increasing frequency. Orig. art. has: 1 figure and 1 table.

SUB CODE: 20

SUBM DATE: none

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COUNTRY : USSR
CATEGORY : Cultivated plants. Ornamental. M
ABS. JOUR. : RZhBiol., No. 12, 1958, No. 104921
AUTHOR : Stroganova, I. A.
INST. : Ministry of Internal Security, USSR
TITLE : Asters.
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ABSTRACT : No abstract.

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1561

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va; NAZAROVA, A.S., tekhn. red.

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nykh rastenii i gazonnykh trav, vyrashchivaemykh pitomnikami tresta
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Materials on sawflies producing galls on willows in Western Siberia.
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(Siberia, Western—Sawflies) (Siberia, Western—Willows—Diseases and pests)
(Galls (Botany))

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V.K.; KURENTOV, A.I., otv. red.

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Siberia damaged by the tent caterpillar *Dendrolimus*
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avtomobil'nogo transporta i shosseynykh dorog RSFSR (for Babkov).

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S/0000/63/000/000/0300/0308

AUTHOR: Presnov, V. A.; Rubashov, M. A.; Yakubeniya, M. P.; Stroganova, V. V.; Ivleva, O. M.

TITLE: The physico-chemical nature of the formation of stable bonds between dissimilar substances

SOURCE: AN UkrSSR. Institut metallokeramiki i spetsial'nykh splavov. Poverkhnostnyye yavleniya v rasplavakh i protsessakh poroshkovoy metallurgii (surface phenomena in liquid metals and processes in powder metallurgy). Kiev, Izd-vo AN UkrSSR, 1963, 300-308

TOPIC TAGS: glass, ceramics, metal, oxygen, oxide, acidity, alkalinity, rare earth element, alumina

ABSTRACT: The authors investigated the soldering of dissimilar substances such as glass, ceramics, and metal, and traced the historical basis of this research. Through a series of mathematical arguments they distributed the oxides of metals according to the increase of their acidic properties. The reaction of rare-earth element oxides La_2O_3 and Y_2O_3 with Al_2O_3 was studied and results were presented in tables. The mechanism for forming the complex compound, which leads to the origin of a

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